

Additional Cost of Borrowing for the RIIO-3 Price Control

22 February 2024

Summary (1): We estimate additional cost of borrowing of 57bps p.a. for RIIO-3, with a range of 54 to 59 bps, compared to Ofgem’s RIIO-2 allowance of 25 bps. We estimate an infrequent issuer premia of 14 bps p.a.

Units: bps p.a.	Ofgem RIIO GD/T2 & ED2	NERA (Feb 2024)	Comment
Transaction Costs	6	6	<ul style="list-style-type: none"> Based on updated companies' data
Liquidity/RCF Costs	4	13	<ul style="list-style-type: none"> Both Ofgem and NERA draw on companies’ assumptions on RCF size and cost, but we assume 15% of RCF drawn to fund working capital/ operational needs Increased liquidity cost also reflects higher short-term borrowing rates at RIIO-3
Cost of Carry	10	12	<ul style="list-style-type: none"> Two approaches: i) companies’ cash and debt in latest RFPRs (12 bps), consistent with Ofgem’s approach at RIIO-2, and ii) assume 12–24-month pre-financing, half met by RCF (range 8-16 bps)
CPIH Premium	5	18-23 (21)	<ul style="list-style-type: none"> Ofgem recognised CPI switching costs of 5 bps p.a. (30 bps for new CPI debt, and 15bps for switching RPI-CPI, weighted by ILD%) We estimate 30-50 bps p.a. for new CPI issuance using latest nominal-CPI swap costs, and 15 bps p.a. for managing RPI-CPI basis risk. Ofgem does not recognise CPI-CPIH basis risk cost, which we estimate to be 40-50 bps p.a. based on 1 st. dev. We estimate the total cost for CPIH basis risk mitigation to be 18-23 bps p.a., by weighting the above estimate with 30% ILD, and new/embedded debt respectively
New Issue Premium (NIP)	0	5	<ul style="list-style-type: none"> Latest market evidence supports a 15bps NIP, consistent with CAA for HAL. Multiplying 15bps with 35% assumed new debt% results in ca 5 bps p.a. of NIP
Additional Cost of Borrowing	25	54-59 (57)	
Small Company/Infrequent Issuer Premia	6	10-18 (14)	<ul style="list-style-type: none"> Lower bound based on the CMS-implied premium, since CMS does not provide risk hedging for credit risk (Ofgem approach) Upper bound based on illiquidity premium estimated using the bid-ask spread differential between sub-benchmark issues and issues at and above £250m
Total	31	64-77 (71)	

Summary (2): Our estimated additional cost of borrowing of 57 bps p.a. excludes sector or company specific factors. Also, needs to be revisited in light of the SSMD financial resilience and other proposals and changes to financial market conditions

- This report estimates additional cost of borrowing common to the sector. It does not incorporate sector-specific or company-specific costs, and therefore should be viewed as a minimum allowance
- Our estimate will also need to be revisited in light of Ofgem's SSMD and updated for changes to market conditions:
 - **Potential financial resilience measures:** In the SSMC, Ofgem proposes to introduce further financial resilience measures¹, including proposed amendment to the "availability of resources" condition to require licensees to hold sufficient financial resources to cover the entire price control period or a minimum of three years ahead. Such a change is likely to increase companies' cost of carry and liquidity costs
 - The liquidity cost/cost of carry estimated in this report are based on historical cash holdings and existing licence requirements, and therefore would understate companies' cost at RIIO-3, if proposed financial resilience measures were to be implemented
 - **Potential changes to notional assumptions:** Our estimate of the additional cost of borrowing is based on notional company assumptions broadly consistent with those at RIIO-2. If there are changes to notional company assumptions at RIIO-3, e.g. changes to the assumed proportion of indexed linked debt (ILD) with consequential costs for the notional company, we will need to revise our estimates
 - **Potential changes to macroeconomic environment and debt capital market considerations:** our estimates reflect the debt capital market and macroeconomic environment at the time of this report. However, companies may face tightening debt market conditions at RIIO-3 and greater cost in raising debt in the future
 - As an example, the limited capacity of the Sterling debt capital market may compel companies to borrow from the non-Sterling market and incur cross-currency swaps. We understand such costs are in the range of 8-11 bps p.a. for 10-12yr cross-currency swaps

Note 1: At SSMC, Ofgem proposes to introduce several financial resilience measures at RIIO-3:

- *Ofgem proposes to amend the licence condition to "require" licensees to maintain more than one investment grade rating, rather than "use reasonable endeavours" or "all appropriate steps"*
- *Ofgem proposes to amend the dividend lock-up trigger to be the earlier of reaching BBB- with a negative watch/outlook, and 80% regulatory gearing*
- *Ofgem proposes to amend the "availability of resources" requirement for board certification to require that the licensee states it has sufficient financial resources to cover the entire price control period or a minimum of three years ahead. Source: SSMC, pp.50-59.*

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1

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Transaction Costs, Liquidity Costs, and Cost of Carry

Companies' data show transaction costs of 6 bps p.a., in line with Ofgem's transaction cost allowance at RIIO-2

- We have collected evidence on transaction costs for public bond issuance distinguishing between:
 - Underwriting fees, bond advisory fees, arrangement fees, rating agency fees, legal fees, auditors fees, listing fees etc.
 - We distinguish between up-front costs and on-going/annual costs
- Taking into account amounts issued and tenors, we calculate up-front transaction cost to be recovered as an annuity over the life of the bond
- We calculate overall transaction cost as:

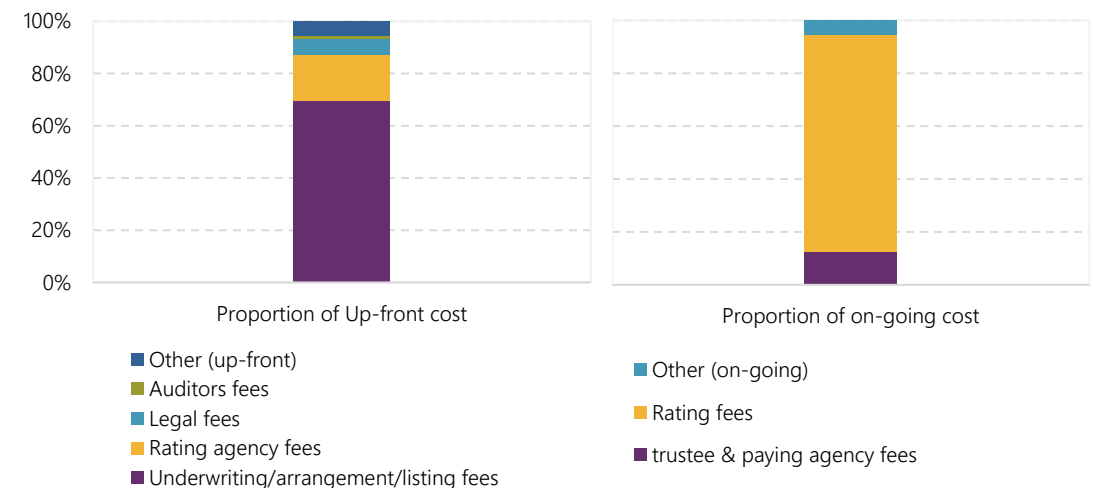
Transaction cost

$$= \frac{\text{upfront fees}}{\text{Tenor of the debt instrument}} + \frac{\text{Per annum costs}}{\text{debt amount issued}}$$

$$+ \frac{\text{per annum common costs}}{\text{notional debt}}$$

- We estimate networks' debt transaction costs to be **6 bps** p.a. on average:
 - Companies' report that ca 50% of annualised costs are up-front. Of these up-front fees:
 - Underwriting fees and/or arrangement fees make up around 70 per cent of up-front costs, Rating agency fees and legal fees providing the other material components
 - On-going costs are mainly rating fees, followed by trustee & paying agency fees
- Our estimate of 6 bps p.a. based on companies' historical transaction cost data, which reflects an average tenor of around 17 years. If Ofgem were to assume a shorter tenor at RIIO-3, e.g. in calibration of cost of debt indexation mechanism, the transaction cost should be adjusted to reflect a shorter tenor

Break-down of up-front and on-going trans. costs



Source: NERA analysis of companies' data

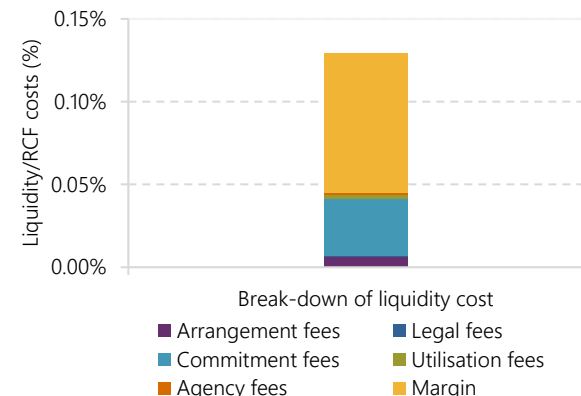
At ED2 FD, Ofgem cites evidence of liquidity/RCF costs of 4 bps p.a. (of notional debt) but does not allow cost of draw-down. In practice, companies draw facilities to fund working capital requirement/operational needs. We estimate liquidity costs of 13 bps p.a. assuming facilities 15 per cent drawn

- At ED2, Ofgem cites evidence of liquidity cost of 4 bps p.a. based on:
 - RFPR and group account data about Revolving Capital Facilities (RCF) holdings, and
 - Using mid-point of a 35-45 bps p.a. range for commitment fees and assuming facilities cover 10 per cent of companies' debt (i.e. 4 bps p.a. = 40 bps*10%)
- Ofgem ignores draw-down costs
 - Companies draw down RCF/working capital facilities (WCF) to manage volatility in cash-flows and meet working capital requirements, incurring utilisation fees and interest cost. We estimate draw-down of notional facility of around 15% based on company data
 - The facilities are drawn to fund working capital requirement, and do not generate any offsetting interest
 - Ofgem previously assumed that the "RCF is not drawn down and that any draw-down costs would be covered through the calibration of the debt allowance."
 - This is incorrect. Our assumed draw-down of 15% RCF is to meet operational needs – it is therefore not remunerated through notional debt financed RAV*cost of debt
- Otherwise, 35-45 bps p.a. reflects only commitment fees, and ignores other potential costs such as upfront arrangement fees, legal fees and annual (agency) fees, although these additional costs are small and of the order of ca 1 bps p.a.

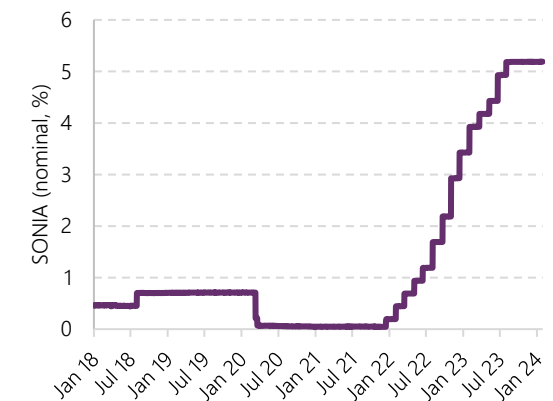
$$\text{Liquidity costs} = \frac{\text{Annuityed upfront fees} + \text{annual on-going costs}}{\text{Notional debt amount}}$$

- We estimate average liquidity cost to be at **13 bps** p.a. of notional debt based on:
 - Ofgem's assumed 35-45 bps p.a. commitment fee and facility size of 10 per cent of debt, as per RIIO-2
 - Annual utilisation fee: 20bps of drawn credit facility amount
 - Interest on the liquidity facility: SONIA + 45 bps
 - Assume facilities are on average 15% drawn to fund working capital
- The 13bps p.a. cost mainly comprises 3 bps of commitment fees on undrawn facilities, and 8bps of margin costs on 15% drawn amount. The interest cost component is relatively high due to high SONIA since 2021 (see Figure below)
 - However, 13bps p.a. could understate liquidity costs if Ofgem implements proposed financial resilience measures, e.g. where availability of resources requirement covers longer time period

Break-down of 13 bps p.a. liquidity cost (assuming 15% average drawdown)



SONIA rate



Source: NERA analysis of companies' data

We estimate cost of carry to be 12 bps p.a. updating Ofgem's RIIO-2 approach. This is consistent with our notional cost of carry calculation. As with liquidity costs, 12bps may understate cost of carry at RIIO-3, if Ofgem implements SSMC financial resilience measures

- Cost of carry is defined as the requirement to issue debt ahead of maturing debt to meet sufficiency of resources requirement, rating agency and debt covenant requirements etc. Issuing ahead of debt maturing is also common practice for uncovenanted non-regulated companies, i.e. reflects prudent risk management
 - Licence condition and rating criteria require pre-financing period 12 to 24 months¹
- At the GD/T2 FD, Ofgem examined cash held by some licensees to estimate cost of carry. Ofgem recognised that corporate Treasury functions can be located at different organisational levels, and that pooling of cash at Group level led to some licensee's having no cash on balance sheet
 - Ofgem used group accounts where licensee level accounts showed no cash
 - Ofgem determined a cost of carry of 10 bps based on NG's group level cash balances and net debt.
- At ED2, Ofgem estimated a cost of carry range of 2-10bps, based on:
 - RFPR and group account data across networks and network group companies, and the five-year average difference between the benchmark iBoxx GBP Utilities 10yr+ index and the 3m cash deposit rate
 - Ofgem adopted the upper bound of the range, stating that it takes into consideration group vs. operating level and the possibility of difference between end-of-year balances and balances at other points during the year
- Updating Ofgem's approach for latest RFPRs, we calculate cost of carry of **12bps** p.a. based on company data that include positive cash balances at OpCo level, indicating that Treasury functions at OpCo rather than group level
 - Our estimate based on median industry realised/forecast RIIO-2 cash requirement of around 5% cash/debt ratio, and the 5-year average spread of iBoxx Utilities 10yr+ index and SONIA of ca 2%
- As a cross-check, we also calculate notional cost-of-carry of **8-16bps** p.a. assuming:
 - Pre-financing needs half met by issuing debt ahead of maturity, and half by RCF
 - Pre-financing period of 12-24 months as required by licence condition/rating criteria, and debt tenor of 15 years (refinancing 1/15 of debt each year)²
 - Net carry cost equals iBoxx Utilities index less SONIA on cash-deposits
- Our cost of carry estimate based on historical cash holdings and existing licence requirements, and may understate companies' cost of carry at RIIO-3, if Ofgem implements proposed financial resilience measures
- Ofwat in its PR24 methodology has not estimated a cost of carry allowance, but has stated that it will consider further evidence. We note that CMA PR19 estimated a cost of carry of around 10 bps p.a., consistent with our own estimate³

Note 1: S&P requires corporate issuers to achieve "adequate" or "strong" assessment on liquidity to receive a credit rating of BBB- and above. To achieve "adequate", sources of liquidity must be at least 1.2x the uses of liquidity over the next 12-month period. To achieve "strong", sources of liquidity least 1.5x the uses of liquidity over the next 12 months with at least 1.0x for the subsequent 12 months (i.e.12 to 24 months)

Note 2: We assume that carry costs are amortised over 15-year bond tenor. However, this assumption should be revisited in light of Ofgem's RIIO-3 assumed refinancing / efficient tenor as part of cost of debt calibration.

Note 3: CMA (Mar 21), Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited Price Determinations, Final report, para.9.902.

2 | CPI/H premium

Ofgem recognised CPI/H switching costs of 5bps p.a. at GD/T2 and ED2. At ED2, Ofgem assumed 30bps p.a. for new CPI-linked debt issuance, and 15bps p.a. for managing existing RPI-CPI basis risk

- At RIIO-GD/T2, Ofgem determined a 5bps p.a. CPIH issuance/basis mitigation allowance for i) new CPI/CPIH debt and ii) managing basis risk between CPI and RPI
 - For new CPI/CPIH, Ofgem assumed a 30bps p.a. cost as per the lower end of NERA's range (reflecting CPI premium at issue). Ofgem then multiplied the 30bps by 30% (assumed ILD debt issuance) and by the average proportion of new debt over RIIO-2¹
 - For managing basis risk, Ofgem assumed a 10 to 15bps p.a. cost based on swap charges. Ofgem then multiplied this cost by 30% (assumed ILD debt issuance) and by the average proportion of embedded debt¹
- At RIIO-ED2, Ofgem retained an additional allowance of 5bps p.a. for i) new debt and ii) managing basis risk of embedded debt
 - For new CPI/CPIH, Ofgem assumed a 30bps p.a. cost as per RIIO-GD&T2. Ofgem then multiplied 30bps by 25% (assumed ILD debt issuance) and by the implied proportion of new debt (22%)²
 - For managing RPI/CPI basis risk on embedded debt, Ofgem assumed a 15bps p.a. cost based on swap charges. Ofgem then multiplied this cost by 25% (assumed ILD debt proportion) and by the average proportion of embedded debt of 78%²

- Table below shows Ofgem's CPIH basis risk allowance at RIIO-GD/T2 and ED2

		Ofgem GD&T2	Ofgem ED2
New Debt			
Cost of CPI-linked issuance	A	30bps	30bps
Proportion of new debt	B	24%	22%
ILD proportion	C	30%	25%
New CPI debt allowance	D=A*B*C	2bps	2bps
Embedded Debt			
Cost of managing RPI/CPI basis risk	E	12.5bps	15bps
Proportion of embedded debt	F	76%	78%
ILD proportion	C	30%	25%
Embedded debt RPI/CPI basis risk allowance	G=E*F*C	3bps	3bps
Total CPI cost	H=D+G	5bps	5bps

Source:

1: Ofgem (Feb 21), RIIO-GD/T2 Final Determinations – Finance Annex (REVISED), pp.13-15

2: Ofgem (Nov 22), RIIO-ED2 Final Determinations Finance Annex, p.16.

On cost of CPI-linked issuance, CPI premia implied from UKPN and SVT CPI-linked bonds currently around 20-35bps but unstable given illiquidity of CPI instruments. Bank quotes indicate 30-50bps p.a. swap costs for nominal to CPI swap

- In our 2020/2021 report, we showed evidence from Oersted and Cambridge CPI-linked bonds supporting a CPI premium of 26-30bps at issuance, increasing to 90-100bps, and we concluded on a 50bps premium
- We focus on two recent CPI-linked bonds since they are issued by regulated utilities which are more comparable to the regulated energy networks.² These are:
 - **UKPN** issued a CPI linked bond on in May 2023 with 20 years maturity
 - **Severn Trent (SVT)** issued CPI linked bond in March 2023 with 22 years maturity
- For each of the UKPN and SVT CPI-linked bonds, we identify a nominal bond from the same issuer, with similar maturities and issue dates
 - These pairs of nominal/CPI-linked bonds are almost identical in maturity (term risk) and issuer (credit risk), the spread between the nominal yield and real CPI yield must reflect: a) expected CPI inflation¹, plus any b) “CPI premium”. That is: Nominal bond yield + **CPI-premium** = Real yield (real, CPI) + Expected CPI
 - the CPI premium of UKPN bond is currently at around 30-40 bps in January 2024, whereas the CPI premium of SVT bond is currently at around 15-20 bps
 - However, our estimated CPI premium using traded CPI-linked bond yields are relatively unstable, likely due to illiquid markets for these instruments
 - We therefore focus on bank quotes for nominal to CPI swaps
- We have collected information on banks’ quotes on the costs associated with issuing CPI-ILD or swapping nominal to CPI
- Our discussions with companies suggest:
 - There is very limited market depth to absorb sector CPI-ILD issuance needs at RIIO-3, and companies generally rely on synthetic CPI-linkers by swapping fixed nominal debt into CPI
 - The main cost component associated with swapping nominal fixed-rate debt to CPI-linked debt are the credit/capital charges on the swaps. The charges on inflation swaps could be considerably higher than interest rate swaps, given the large implied credit exposure from the future bullet payment of inflation accretion
 - The current quote on charges associated with structuring a nominal-CPI inflation swap are in the range of **30 to 50 bps** p.a. for a 10-yr swap based on data from companies/their banks

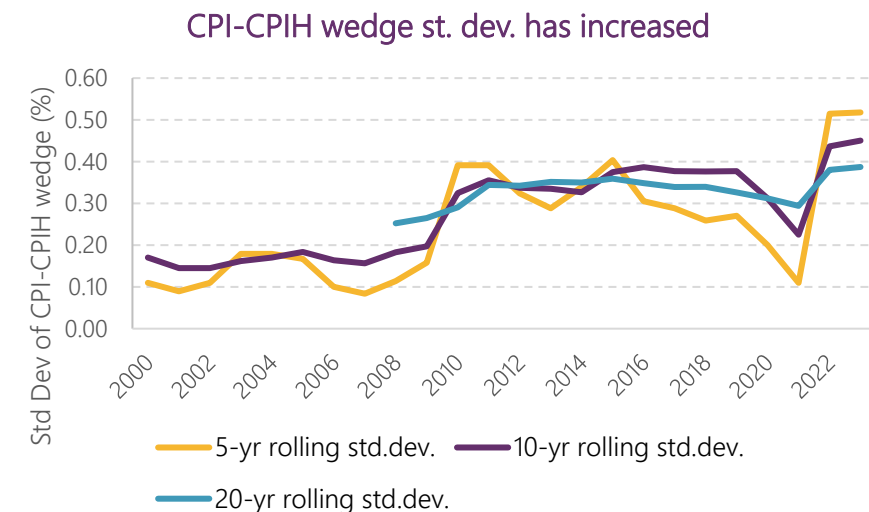
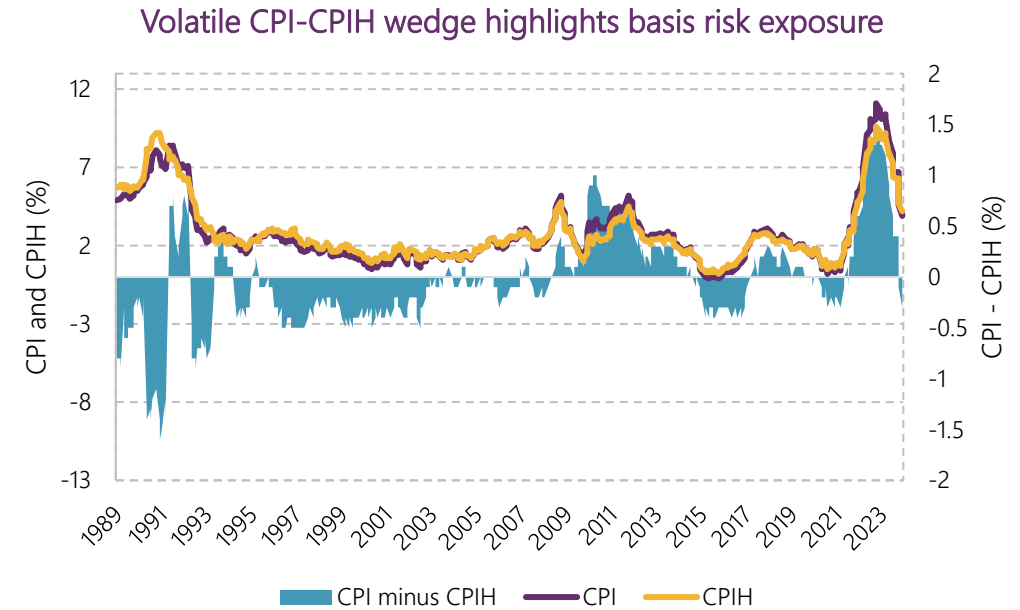
Sources:

1: *Ofgem (Feb 21), RIIO-2 Final Determinations – Finance Annex (REVISED)*, p.174.

2: In our RIIO-2 study for ENA, we relied on bonds issued by Oersted and Cambridge University. However, we can no longer rely on Oersted as bond yields affected by financial distress in 2023, see, e.g., *Reuters (30 Aug 2023), Oersted plunges 20% on risk of \$2.3 billion in US impairments. FT (2 Nov 23), Ørsted troubles mount as S&P threatens credit-rating downgrade*. Cambridge bond yield data is no longer available.

Companies also exposed to CPI-CPIH basis risk, which is not compensated in the existing allowance which only includes CPI premium

- Companies issue CPI-linked debt (i.e. pay CPI), and yet revenues are linked to CPIH through RAV indexation
 - Companies exposed to the risk of CPI-CPIH wedge
 - Such basis risk is not compensated through the existing CPI premium allowance, as it only allows for issuing CPI debt and managing basis risk between CPI and RPI, rather than CPIH
- CPI-CPIH wedge has been volatile over time:
 - Volatility of the CPI-CPIH wedge has increased over time, suggesting an increase in basis risk. The 5-/10-year rolling standard deviations of CPI-CPIH wedge sharply higher since 2021 (see bottom-right Figure)
 - Standard deviation of CPI-CPIH wedge is around **40-50 bps**, with 50 bps based on last 5 years data, and 40 bps based on long-term data (e.g. 20-yr or full CPI/H dataset since 1989)



CPI-CPIH wedge (bps)	1989-2023 (full data)	2014-2023 (last 10 yrs)	2019-2023 (last 5 yrs)
Std. Dev.	41	45	52

Note: CPIH is defined as the Consumer Prices Index including owner occupiers' housing costs. CPIH is identical to the CPI, with the exception of inclusion of owner occupiers' housing costs and Council Tax.
Source: ONS data

Taking into account CPI/CPIH basis risk, we estimate CPIH basis risk mitigation cost to be 18-23 bps p.a. for RIIO-3

- Our discussions with companies suggest it is not possible to hedge CPI-CPIH basis risk in any meaningful volume through financial instruments
 - there is currently no market for CPI v CPIH wedge swaps of any meaningful size, since institutional investors generally do not have exposure to CPIH, and as such there is no appetite from these investors for taking the other side of the swap that the banks could write with companies. Unlikely to change in the near term
 - Therefore, companies would have to bear the basis risk on the CPI-CPIH wedge. We estimate the compensation for CPI-CPIH basis risk to be 40-50 bps, based on one standard deviation of historical CPI-CPIH wedge
 - Overall, the additional cost of new CPIH linked issuance is **30-50 bps** of issuing new CPI debt relative to nominal debt, plus **40-50 bps** of CPI-CPIH basis risk
- At ED2, Ofgem assumes a **15 bps** cost based on swap charges for managing RPI/CPI basis risk on embedded debt, but does not include any allowance for managing the CPI-CPIH basis risk
 - As explained above, given that the lack of natural counterparties for CPI-CPIH swaps, the cost associated with managing RPI/CPIH basis risk would be i) the cost for managing RPI-CPI costs (15 bps based on swap charges), plus a further **40-50 bps** for bearing CPI-CPIH basis risk based on one standard deviation of historical CPI-CPIH wedge
- Our overall estimate of **18-23 bps** is based on no change to RIIO-2 ILD assumptions. If Ofgem changes its notional assumptions, then changes to the notional company structure may affect our CPI/CPIH basis risk estimates

		GD&T2	ED2	NERA (Feb 2024)	Comments
New Debt					
Cost of CPI-linked issuance	A	30 bps	30 bps	30-50 bps	Based on bank quotes on swap charges of 30-50bps,
CPI-CPIH basis risk	B			40-50 bps	Based on one standard deviation of historical CPI-CPIH wedge
Proportion of new debt	C	24%	22%	35%	Consistent with ca 15yr tenor
ILD proportion	D	30%	25%	30%	Same as GD/T2
New CPIH debt allowance	E=(A+B)*C*D	2bps	2bps	7-11bps	
Embedded Debt					
Cost of managing RPI/CPI basis risk	F	12.5bps	15bps	15bps	Based on RPI/CPI swap cost
CPI-CPIH basis risk	B			40-50 bps	Based on one standard deviation of historical CPI-CPIH wedge
Proportion of embedded debt	G=1-C	76%	78%	65%	
ILD proportion	D	30%	25%	30%	Same as GD/T2
Embedded debt RPI/CPIH basis risk allowance	H=(F+B)*G*D	3 bps	3 bps	11-13 bps	
Total allowance for CPIH risk mitigation	I=E+H	5 bps	5 bps	18-23 bps	

Ofgem would be wrong to assume removal of CPI/H issuance and basis mitigation allowance from 2030 given RPI/CPIH alignment, because it ignores transition costs and exposure to potential requirements to compensate existing bondholders when the transition occurs

- In the RIIO-3 SSMC, Ofgem commented that it is considering removing the CPI/H issuance and basis mitigation allowance from 2030, given the anticipated migration of the RPI inflation measure to the CPIH methodology from February 2030.¹

RIIO-GD/T3					
FYE	2027	2028	2029	2030	2031

RIIO-ED3					
FYE	2029	2030	2031	2032	2033

- However, CPI/H issuance and basis risk mitigation cost should continue to be allowed because
 - Companies could face transition costs from having to compensate bondholders for a fundamental change in a bond’s index, where the real coupon may have to be increased to ensure the investor is no worse off as a result of change
 - Companies will also face costs associated with negotiating these changes with bondholders and making changes to documentation, which may require a consent solicitation process. At a minimum, these costs would include legal, trustee, agency and administration/tabulation fees and, at a maximum, would also include any fees paid to banks for running a consent solicitation process
 - These elements could therefore expose companies to costs substantially higher than the 18-23 bps p.a. CPI/H issuance and basis mitigation allowance that we have estimated (see previous slide)

Source: 1. RIIO-3 Sector Specific Methodology Consultation – Finance Annex, para 2.19.

3

Updated Evidence on the Halo Effect and New Issue Premium

In its GD2/T2 and ED, Ofgem concluded there is a small positive halo, but decided not to deduct this from Utilities iBoxx. We have updated our analysis, and we find a new issue premium (NIP, or negative halo) of between 6-8 bps

- At GD2/T2 DD¹, Ofgem estimated a halo effect of 4 bps by comparing company spreads relative to the iBoxx Utilities index, i.e.:

$\text{Halo effect} = \text{iBoxx index spread} - \text{company's bond spread}$
- In its GD2/T2 FD, Ofgem concluded that there is a small positive halo (i.e. an outperformance of the index rather than an issuance premium), but decided not to deduct the estimated halo from the Utilities iBoxx yields for the amount was small, and considers it is reasonable not to assume future outperformance of the Utilities index
- In our previous reports for ENA, we noted Ofgem’s spreads do not control for tenor precisely:
 - Ofgem calculated the spread for the iBoxx index and company bond relative to a specific benchmark gilt, but there may not be a benchmark gilt that exactly matches the tenor of the bond issue, particularly for long-dated gilts
 - We calculated credit spreads that match more precisely the tenor of the iBoxx and company bond using the Bank of England yield curve. We also calculated duration-matching spreads to allow for the fact that companies’ bonds pay coupons
- At ED2, Ofgem again calculated a positive halo of +11 and +7 bps respectively based on simple average and weighted average, but Ofgem did not propose an explicit adjustment for any halo effect. However, we noted that Ofgem’s estimate is not reliable, as its sample excludes relevant bonds issued by SSE, and includes callable bonds

- We have updated our estimate of the new issue premium (NIP) and continue to find a negative halo of between 6-8 bps p.a. based on a sample constructed as follows:
 - We exclude callable bonds, which could lead to imprecise duration-matching and inaccurate halo estimate
 - We include SSE plc’s bonds as these are associated with energy networks owned by SSE (SEPD, SHEPD, SHET)
 - We compare companies’ bond yields and iBoxx yields on issue date, rather than pricing date, since conceptually the pricing should reflect the expected movement between the pricing date and issued date. Final terms of bonds represent the yield at issue at the issue date

We find negative halo of 6-8 bps using iBoxx Utilities spreads

	Halo effect (negative value = underperformance or new issue premium)		
	Ofgem GD/T2	Ofgem ED2	NERA (Feb 2024)
Simple average	+8 bps	+11 bps	-6 bps
Weighted average	+4 bps	+7 bps	-8 bps

Source: NERA analysis; Ofgem (December 2020) Decision - RII0-2 Final Determinations – Finance Annex (REVISED), p. 174. Ofgem (June 2022) RII0-ED2 Draft Determinations – Finance Annex, para 2.15.

NIP reflects the cost of incentivising investors in the primary market relative to the secondary traded market. Companies' recent experience show NIP has increased to 10-19 bps since 2022 due to tightening macroeconomic and financial market conditions

- A NIP or negative halo is not surprising
 - it reflects the cost of incentivising investors in the primary market relative to the secondary traded market yields
 - Indeed, our estimate of NIP is in line with other recent studies of the costs of issuing corporate bonds, which estimate a NIP estimate of **10-14 bps**¹
- Additionally, latest evidence from companies supports the existence of NIP, and shows that NIP have increased in recent years
 - As shown in table below, average NIPs for new issuances in the utilities sector increased to **10-19 bps** in 2022-2024 from 4-6 bps. Similar NIPs observed for the general market

Average New Issue Premium for GBP issues (bps)

	Market	Utility
2024	16	10*
2023	12	13*
2022	16	19
2021	4	4
2020	8	6

Note: *2024 and 2023 figures excludes Thames Water transactions. Including Thames Water transactions, the 2024 figure would be 14bps and 2023 figure would be 15 bps
Source: Clearing banks' estimates

Sources: 1. Maitra and Salt (2018) estimates an average NIP of 14bps for European corporate bond since 2009; Rischen and Theissen (2018) estimates the NIP to be 10bps, measured as the under-pricing in the primary issues of European corporate bonds. Maitra and Salt (May 2018) New issuance premium in European corporate bonds, Lombard Odier Asset Management; Rischen and Theissen (2018), Underpricing in the euro area corporate bond market: New evidence from post-crisis regulation and quantitative easing, CFR Working Paper, No. 18-03.

- Recent increase in NIP could be explained by changes in the macroeconomic and financial market conditions:
 - **Central banks have reduced demand for corporate bond purchases.** Since 2022, the UK and EU central banks started to reduce bond holdings as they withdrew Quantitative Easing programs. This has led to a reduction in corporate bond demand, and an increase in the cost for issuers to incentivise participation in the primary market
 - **Private bond investors reduced participation in primary market due to increased requirement for cash holdings.** In recent years investors have increased cash balances required for risk management which affects participation in the primary market. Combined with the withdrawal of QE, this has further raised costs for new debt issues
 - **Investors demand higher NIP to compensate for greater market volatility.** Heightened volatilities in inflation and interest rates have severely impacted the primary market, and investors have been demanding higher new issue concessions in order to compensate for the volatility and provide a buffer if spreads were to widen in the proceeding days. Companies report that these at the peak of market volatilities, the NIP were as high as 40-50 bps even for issuers with high credit ratings
- As a result, data provide by banks suggest an increase in NIP to **10-19 bps** reflecting current market conditions
 - This is above our estimate of 6-8 bps, which is based on a longer period of historical data

At H7 price control for Heathrow, CAA allowed a 15bps p.a. NIP in line with the midpoint of HAL's submitted NIP range (10-20bps) and CAA's own analysis

- At the H7 price control, the CAA allowed a New Issue Premium (NIP) of **15 bps** p.a. for Heathrow Airport Limited (HAL)'s cost of new debt
 - CAA states that “The use of secondary market yields means that we must also consider whether it is appropriate to apply a New Issue Premium”¹
- The CAA provides evidence that newly issued bonds exhibit a premium to secondary market yields, citing:
 - Global Capital data which suggests that the NIP varied from 0-43 bps in 2022, with a median value of 16 bps, depending on the week of issue²
 - HAL NIP evidence of 10-20 bps on the £1.4bn debt it raised in October 2020, as identified by UBS and Deutsche Bank³
- CAA concluded that it should apply a NIP of 15 bps p.a. to the cost of new debt for HAL, in line with the midpoint of HAL's range

Source: 1,2 CAA (March 2023), H7 Final Decision, Section 3: Financial issues and implementation, CAP2524D, para 9.176.
3. Heathrow Airport Limited H7 Revised Business Plan, p.408.

Conclusion: We estimate a NIP of 15 bps for new debt issuance, reflecting latest market evidence and consistent with CAA's decision. Assuming 35% new debt proportion, this implies a NIP of ca 5bps

- We find a negative halo of between **6 and 8 bps** based on a sample including all recent bond issues over the historical period 2006 to 2023
- As we have set out in previous studies for ENA, a negative halo is not surprising: it reflects the cost of incentivising investors in the primary market relative to the secondary traded market yields. Indeed, our estimate of NIP is in line with other studies of the costs of issuing corporate bonds, which estimate a NIP estimate of **10-14 bps**
- Latest evidence from companies supports the existence of NIP, and shows that NIP have increased in recent years
 - Average NIPs for new issuances in the utilities sector increased to **10-19bps** in 2022-2024, explained by tightening macroeconomic and financial market conditions
- At H7 price control for Heathrow, CAA allowed a NIP of **15 bps** p.a. in line with the midpoint of HAL's submitted NIP range (10-20 bps) and CAA's own analysis
- Based on the most recent market evidence from banks of 10-19 bps p.a., we estimate an NIP of **15 bps** p.a. for new debt issuance , consistent with CAA's decision
 - Assuming new debt proportion of 35%, we calculate the NIP to be **5 bps p.a.** , i.e. $15 \text{ bps} \times 35\%$, for the additional cost of borrowing¹

Note 1: The new debt proportion based on RIIO-2 assumption and should be revisited in light of Ofgem's RIIO-3 decisions

4 | Infrequent Issuer Premium

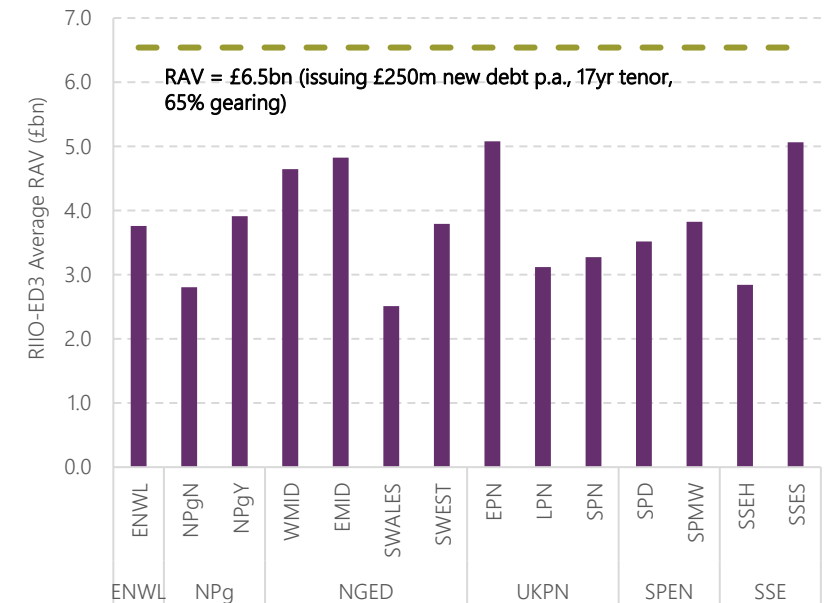
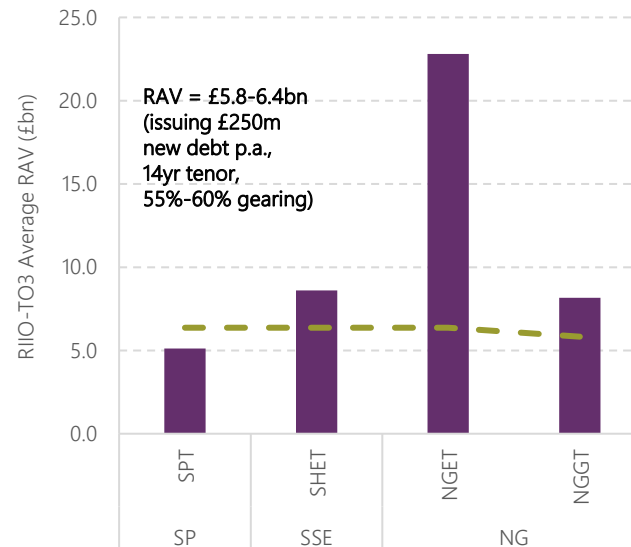
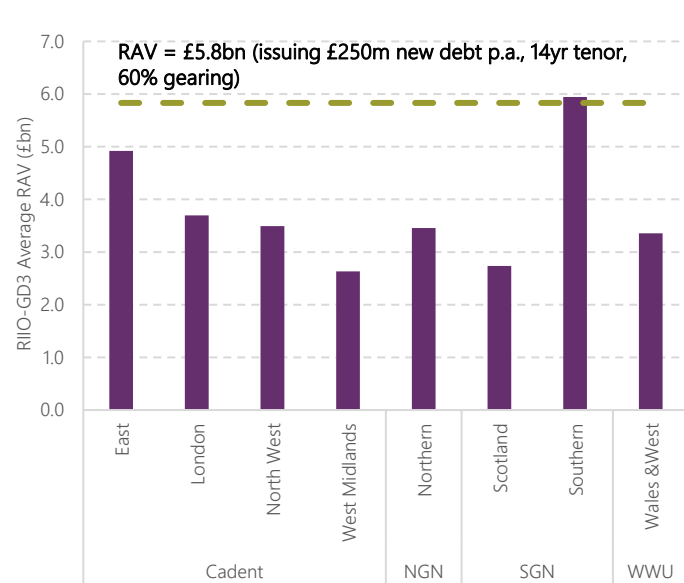
At GD2/T2, Ofgem allowed 6 bps p.a. allowance for notional licensees expected to issue smaller size or less frequently

- In its FD for GD2/T2, Ofgem allowed 6 bps p.a. additional provision for notional licensees expected to issue smaller size or less frequently than other networks due to their lower RAV size and RAV growth for RIIO-2.¹
 - Ofgem defined less frequently issuing notional networks as those that are expected to issue less than £150 million p.a. on average, lower than the assumed £250 million minimum efficient size as Ofgem considered that it was possible to issue £250 million face value but then retain up to £100 million for sale at a later date.
 - Ofgem's allowance is designed to address the cost or risk associated with infrequent issuance, which exposes companies to risk that their debt will deviate from the allowance.
- Ofgem's 6 bps p.a. allowance based on two main sources:
 - i) **Evidence from constant maturity swaps (CMS)**: under CMS, the issuing party receives a fixed iBoxx rate (on the date of issuance) and pays a rate that is reset daily based on the swap rates matching the duration of the debt issuance.
 - In the case of GD2/T2, the assumed maturity was 15 years. SGN, drawing on evidence from banks on the price of the CMS of 26 bps and applying to new debt only, estimated a cost of ca 6 bps p.a.
 - ii) **Liquidity premium for smaller debt issuance**: an alternative is to assume companies issue lower value nominal debt on an annual basis yet at a higher cost, reflecting the reduced liquidity of lower face value debt.
 - At GD2/T2, NGN estimated the liquidity premium at around 15 bps, and applying to its new debt issuance over RIIO-2 of ca 40 per cent translated into a 6 bps uplift.
 - Whilst SGN and NGN adopted different approaches, they led to the same additional allowance of 6 bps, which Ofgem considered reasonable

Sources: 1. Ofgem (2020) Decision - RIIO-2 Final Determinations – Finance Annex (REVISED) para 2.62 p. 23.

All GDNs (except for Southern) and DNOs qualify as infrequent issuers, whereas TOs do not qualify except for SPT

- At ED2 FD, Ofgem decided that:
 - 6 bps p.a. infrequent issuer premium will be applied at the individual licensee level
 - Ofgem also decided to adopt the eligibility threshold for the infrequent issuer premium of £250m p.a.¹
- We identify networks² that qualify for the premium by comparing:
 - i) RAV implied by the minimum new debt issuance, e.g. for GDNs calculated as $\text{£}250\text{m} \times 14 / 60\%$, i.e. assuming that 1/14th of debt RAV is refinanced each year, and that annual RAV growth is funded 60% by debt
 - ii) company's expected RAV in RIIO-3, based on PCFM's RIIO-2 RAV and 5% annual nominal growth
- All GDNs except for Southern, and DNO licensees qualify for the infrequent issuer premium based on Ofgem's approach, whereas TOs do not qualify except for SPT



Note 1: Ofgem (Nov 22), RIIO-ED2 Final Determinations Finance Annex, p.9.

Note 2: At RIIO-2, Ofgem assessed infrequent issuer premium at the licensee level rather than at the individual network level. For consistency across ownership groups, we undertake our analysis at the network level, as opposed to the licensee level.

Note 3: The assessment of which networks qualify for the infrequent issuer premium will need to be updated during the RIIO-3 process, in line with updates to the forecast RAV.

Latest CMS costs have increased from 26 bps to 18-41bps p.a. As an alternative, we estimate the illiquidity premium for bond issuance below £250m to be 50bps p.a. based on evidence from bid-ask spread

Latest CMS costs have increased to 18-41bps p.a. Underestimates infrequent issuer cost, as CMS does not hedge credit risk

- At GD2/T2, Ofgem used CMS to estimate cost of mitigating interest rate risk at **26 bps** p.a. However, CMS provide a lower bound value of the infrequent issuer premium:
 - CMS only covers the interest rate risk, but credit spread risk is not hedged, hence an infrequent issuer still carries disproportionate financial risk exposure.
 - As shown below, the historical credit spread of iBoxx Utilities index shows that infrequent issuers may face substantial credit risk
- Latest estimates from banks indicate that CMS costs in range of **18-41 bps p.a.** (mid-point **30bps**), higher than the 26bps estimated at RIIO-GD/T2



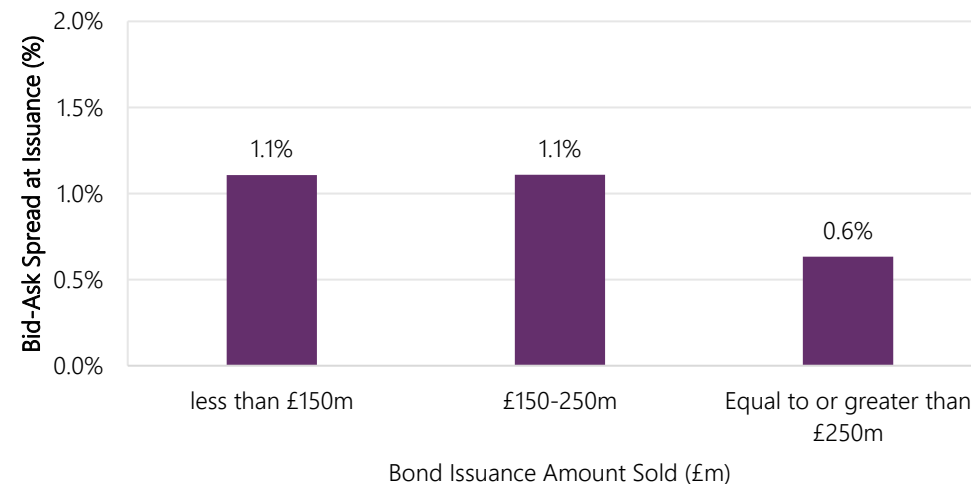
Sources: NERA analysis



www.nera.com

Bid-ask spreads of bonds smaller than 250m benchmark size have ca 50 bps higher bid-ask spread

- An alternative considered by Ofgem at GD2/T2 is to assume companies issue lower value nominal debt on an annual basis yet at a higher cost, reflecting the reduced liquidity of lower face value debt
- We estimate the illiquidity premium based on the bid-ask spreads for bonds by size of issuance:
 - Data shows that average bid-ask spread on issuance dates for bonds smaller than £250m is ca **50 bps** higher than bonds issued at or above £250m



Note: We focus on the bid-ask spread for bond prices at the date of issuance to address the concerns that secondary trading for bonds below benchmark size may be illiquidity after issuance
Source: NERA analysis of networks' bond data

Conclusion: We estimate an infrequent issuer premium to be 10-18 bps p.a.

- We find that all GDN (except for Southern) and DNO licensees would qualify Ofgem's definition of non-frequent issuing notional networks, based on the criterion of issuing less than £250m p.a. on average. However, TOs do not qualify except for SPT
- Ofgem underestimated the infrequent issuer cost at GD2/T2 using CMS and illiquidity premium:
 - CMS only hedges the interest rate risk and not credit risk – therefore provides a lower bound value of the infrequent issuer premium
 - Latest estimates from banks indicate CMS costs in range of 18-41 bps p.a. (mid-point of 30 bps), higher than the 26 bps estimated at RIIO-GD/T2
 - As an alternative, we estimate the average bid-ask spread at issuance for bond issues smaller than £250m to be ca 50 bps higher than bonds issued at or above £250m, suggesting illiquidity premium could be ca 50 bps
- Therefore, we consider the infrequent issuer premium should be in the range of 10 bps to 18 bps p.a.:
 - lower bound of **10 bps**, (mid-point of 18-41 bps*35% new debt/total debt assumed in RIIO-3) based on the CMS-implied premium, since CMS does not provide risk hedging for credit risk.
 - Upper bound of **18 bps** (50bps*35% new debt/total debt, based on RIIO-2) based on the bid-ask spread differential between the sub-benchmark sized issues and issues at and above £250m.

Note: The assessment of which networks qualify for the infrequent issuer premium will need to be updated during the RIIO-3 process, in line with updates to the forecast RAV.

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